

## TURNING POINT SURVEY OF FUNGICIDE USE IN SUGARBEET IN MINNESOTA AND EASTERN NORTH DAKOTA IN 2016

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The second annual fungicide practices live polling questionnaire was conducted using Turning Point Technology at the 2017 Winter Sugarbeet Growers' Seminars. Responses are based on production practices from the 2016 growing season. The survey focuses on responses from growers in attendance at the Fargo, Grafton, Wahpeton, ND and Willmar, MN Grower Seminars. Respondents from each seminar indicated the county in which the majority of their sugarbeets were produced (Tables 1-4). Survey results represent approximately 158,272 acres reported by 235 participants (Table 5) compared to 183,350 acres represented in 2016. The average sugarbeet acreage per respondent grown in 2016 was calculated from Table 5 at 673 acres, compared to 674 acres in 2015.

Survey participants were asked a series of questions regarding their fungicide practices used on sugarbeet in 2016. Twenty-eight percent of respondents reported that they used five sprays to control *Cercospora* Leaf Spot (Table 6) while 22% said they used three sprays, 17% used four sprays, 11% used seven sprays, 10% used six sprays, 7% used two sprays, 3% used one spray and 1% both used no sprays and more than seven sprays. Thirty-five percent of respondents both reported a fair amount of effectiveness and a poor amount of effectiveness (Table 7). Twenty-seven percent said they had a good amount of control from CLS spray, 3% had an excellent amount of effectiveness and 1% said they did not use any fungicide for control of CLS. Respondents were then asked when they experienced failure of fungicides to control CLS (Table 8). Twenty-seven percent of respondents reported failure between August 1 and August 15, 17% said field failure occurred between August 16 and August 31, 11% said that failure occurred between September 1 and September 15, 10% said it occurred before July 31, 5% said CLS field failure happened between September 16 and September 30 and 4% said after September 30. Meanwhile, 26% of respondents said they did not experience field failure (Table 9). Participants in the survey were then asked what fungicide was sprayed right before the field experienced failure. Thirty-three percentage of respondents said that Headline was sprayed right before failure, 20% reported Tin, 15% said Priaxor, 9% reported some kind of fungicide mixture, 5% said Topsin while the same percentage also reported Proline and Gem was sprayed right before field failure due to CLS. Four percent said Minerva or Eminent and 3% said the Inspire XT was sprayed right before failure.

Respondents were then asked about soil-borne diseases. Forty percent said their fields were affected by both *Rhizoctonia* and *Aphanomyces*, 36% said just *Rhizoctonia*, 15% had neither disease in their fields and 10% had only *Aphanomyces* (Table 10). Eighty seven percent of respondents used a *Rhizoctonia* resistant variety in 2016 (Table 11) while 88% used an *Aphanomyces* resistant variety (Table 17).

Participants were asked what methods were used to control *Rhizoctonia* and 55% said they used a seed treatment only, 35% used a seed treatment and a POST fungicide, 4% used a seed treatment plus an in-furrow fungicide while 4% also said they used a seed treatment, in-furrow fungicide and a POST fungicide. Two percent only used a POST fungicide (Table 12). Eighty-five percent of respondents used a Kabina seed treatment while 11% used a Rizolex + Metlock + Kabina mixture, 3% used a different seed treatment and 15 reported not using a seed treatment to control *Rhizoctonia* (Table 13). Eighty-seven percent of respondents did not use an in-furrow fungicide but 8% of respondents used Quadris in-furrow, 4% used Headline in-furrow to control *Rhizoctonia* and 1% used a different fungicide (Table 14).

Respondents were asked what POST fungicides were used to control *Rhizoctonia* and 45% did not use a POST fungicide to control *Rhizoctonia*. Of the remaining 55%, 44% used Quadris, 5% used Priaxor, 3% used Proline, 1% used Headline while 2% used a different fungicide (Table 15). Participants were then asked to grade the effectiveness of the POST fungicides that were used. Forty-one percent were unsure of the effectiveness, 32% said

they performed good, 17% reported fair results, 6% said they performed poorly and 4% said they were excellent (Table 16).

Participants were also asked about use of waste lime to control *Aphanomyces*. 56% of participants did not use waste lime in their fields while 23% used 5 tons/acre or less. Nineteen percent used between 6 and 10 tons/acre while 2% used more than 10 tons/acre (Table 18). Respondents were also asked about their soil pH. Thirty-six percent said it was between 8.0 and 8.5, 29% said that it was between 7.5 and 8.0, 22% said it was between 7.0 and 7.5, 6% said between 6.5 and 7.0, 5% said between 6.0 and 6.5 and 1% said between 8.5 and 9.0 (Table 19). As a follow-up question, growers were asked whether or not they were concerned about using waste lime on soils above 8.0 pH. Seventy-four percent said no while the remaining 26% said they were concerned (Table 20). Finally, the growers were asked how effective their waste lime was. Fifty percent of respondents did not apply lime, 19% said they had good results, 15% were unsure, 9% reported excellent results, 5% said fair and 1% said poor (Table 21).

**Table 1. 2017 Fargo Grower Seminar – Number of survey respondents by county growing sugarbeet in 2016.**

County	Number of Responses	Percent of Responses
Barnes	3	9
Cass	7	21
Clay	11	32
Norman <sup>1</sup>	8	24
Richland	1	3
Trail	3	9
Wilkin <sup>2</sup>	1	3
Total	34	100

<sup>1</sup>Includes Mahnomen County

<sup>2</sup>Includes Otter Tail County

**Table 2. 2017 Grafton Grower Seminar – Number of survey respondents by county growing sugarbeet in 2016.**

County	Number of Responses	Percent of Responses
Grand Forks	1	2
Kittson	4	7
Marshall	5	9
Pembina	19	35
Polk	1	2
Walsh	23	43
Other	1	2
Total	54	100

**Table 3. 2017 Wahpeton Grower Seminar – Number of survey respondents by county growing sugarbeet in 2016.**

County	Number of Responses	Percent of Responses
Cass	2	4
Clay	3	7
Grant	5	11
Otter Tail	1	2
Richland	7	16
Stevens	1	2
Traverse	5	11
Wilkin	21	47
Total	45	100

**Table 4. 2017 Willmar Grower Seminar - Number of survey respondents by county growing sugarbeet in 2016.**

County	Number of Responses	Percent of Responses
Chippewa	36	33
Kandiyohi	17	16
Pope	0	0
Redwood	5	5
Renville	31	28
Stearns	3	3
Stevens	1	1
Swift	9	8
Other	7	6
Total	109	100

**Table 5. Total sugarbeet acreage operated by respondents in 2016.**

Location	Responses	Acres of sugarbeet									
		<99	100-199	200-299	300-399	400-599	600-799	800-999	1000-1499	1500-1999	2000+
		-----% of responses-----									
Grafton	54	6	15	11	9	17	9	11	9	2	9
Fargo	33	3	0	15	18	18	6	9	12	6	12
Wahpeton	42	2	7	2	10	33	17	12	10	5	2
Willmar	107	7	15	15	6	22	10	3	14	2	7
Total	235	6	11	12	9	22	11	7	12	3	7

**Table 6. How many fungicide application did you make to control CLS in 2016?**

Location	Respondents	Number of applications								
		0	1	2	3	4	5	6	7	>7
		-----% of respondents-----								
Fargo	37	-	-	16	35	27	22	-	-	-
Grafton	50	2	16	22	56	4	-	-	-	-
Wahpeton	46	-	-	-	20	30	48	2	-	-
Willmar	105	1	-	-	3	14	35	22	24	1
Total	238	1	3	7	22	17	28	10	11	1

**Table 7. How effective were your fungicide applications on CLS in 2016?**

Location	Respondents	Effectiveness of CLS sprays					
		Excellent	Good	Fair	Poor	Unsure	No applications
		-----% of respondents-----					
Fargo	36	3	47	39	11	-	-
Grafton	50	6	58	34	2	-	-
Wahpeton	45	-	11	29	60	-	-
Willmar	107	2	12	36	48	-	2
Total	238	3	27	35	35	-	1

**Table 8. When did you experience failure of fungicides to control CLS?**

Location	Respondents	Date of fungicide failure						
		No failure	July 31	August 15	August 31	September 15	September 30	After September 30
		-----% of respondents-----						
Fargo	32	25	9	13	31	9	9	3
Grafton	49	55	-	12	8	14	6	4
Wahpeton	44	2	18	55	18	5	2	-
Willmar	15	7	20	27	13	20	-	13
Total	140	26	10	27	17	11	5	4

**Table 9. If you had failure with fungicides for CLS control, which fungicide did you apply prior to observing field failure?**

Location	Respondents	Fungicide failure								
		Minerva, Eminent	Inspire XT	Proline	Headline	Priaxor	Gem	Tin Topsin	EBDC	Mixtures
		-----% of respondents-----								
Fargo	21	-	10	10	38	10	-	19	-	14
Grafton	34	-	3	3	6	26	-	26	12	24
Wahpeton	40	8	-	3	78	8	-	3	-	3
Willmar	88	6	2	7	22	16	10	27	6	5
Total	183	4	3	5	33	15	5	20	5	9

**Table 10. What soil-borne diseases affected your sugarbeet production in 2016?**

Location	Respondents	Root disease			
		Rhizoctonia	Aphanomyces	Both	Neither
		-----% of respondents-----			
Fargo	34	35	15	35	15
Grafton	49	27	14	57	2
Wahpeton	43	47	2	21	30
Total	126	36	10	40	15

**Table 11. Did you use a *Rhizoctonia solani* resistant variety in 2016?**

Location	Respondents	Variety type	
		Yes	No
		-----% respondents-----	
Fargo	35	97	3
Grafton	47	94	6
Wahpeton	40	90	10
Willmar	98	80	20
Total	220	87	13

**Table 12. What methods were used to control *Rhizoctonia solani* in 2016?**

Location	Respondents	Treatment methods				
		Seed treatment only	In-Furrow only	Postemergence only	Seed treatment + In-Furrow	Seed treatment + Postemergence
		-----% of respondents-----				
Fargo	34	47	-	-	-	53
Grafton	48	42	-	-	4	54
Wahpeton	42	86	-	-	2	10
Willmar	99	52	-	4	6	30
Total	223	55	-	2	4	35

**Table 13. Which seed treatment did you use to control *Rhizoctonia solani* in 2016?**

Location	Respondents	Seed treatment			
		Kabina	Rizolex + Metlock + Kabina	Other	None
		-----% of respondents-----			
Fargo	35	86	14	-	-
Grafton	49	82	10	4	4
Wahpeton	39	87	10	3	-
Willmar	101	85	10	4	1
Total	224	85	11	3	1

**Table 14. Which fungicide did you apply in-furrow to control *R. solani* in 2016?**

Location	Respondents	In-furrow fungicide use			
		Headline	Quadris	Other	None
		-----% of respondents-----			
Fargo	32	6	9	-	84
Grafton	49	2	8	-	90
Wahpeton	41	-	10	-	90
Willmar	104	6	7	3	85
Total	226	4	8	1	87

**Table 15. Which POST fungicide did you use to control *R. solani* in 2016?**

Location	Respondents	POST fungicide					
		Headline	Quadris	Proline	Priaxor	Other	None
		-----% of respondents-----					
Fargo	34	-	59	-	3	-	38
Grafton	51	4	63	2	14	-	18
Wahpeton	40	-	10	-	-	5	85
Willmar	102	1	44	5	3	2	45
Total	227	1	44	3	5	2	45

**Table 16. How effective were your POST fungicides at controlling *Rhizoctonia solani* in 2016?**

Location	Respondents	Effectiveness of fungicides				
		Excellent	Good	Fair	Poor	Unsure
		-----% of respondents-----				
Fargo	30	3	47	13	-	37
Grafton	46	2	41	35	7	15
Wahpeton	33	-	9	3	3	85
Willmar	89	6	30	16	8	40
Total	198	4	32	17	6	41

**Table 17. Did you use an Aphanomyces resistant variety in 2016?**

Location	Respondents	Variety type	
		Yes	No
		-----% respondents-----	
Fargo	25	96	4
Grafton	47	87	13
Wahpeton	38	84	16
Total	110	88	12

**Table 18. What rate of precipitated calcium carbonate (waste lime) did you use?**

Table 18: What rate of precipitated calcium carbonate (waste milk) did you use?					
Location	Respondents	Lime use rate			
		None	>5 T/A	6-10 T/A	10+ T/A
		-----% of respondents-----			
Fargo	33	61	3	27	9
Grafton	52	77	-	21	2
Wahpeton	41	39	15	44	2
Willmar	101	51	46	4	-
Total	227	56	23	19	2

**Table 19. What is your soil pH?**

		Soil pH					
Location	Respondents	6.0-6.5	6.5-7.0	7.0-7.5	7.5-8.0	8.0-8.5	8.5-9.0
		-----% of respondents-----					
Fargo	32	-	6	13	31	50	-
Grafton	45	9	7	29	27	27	2
Total	77	5	6	22	29	36	1

**Table 20. Are you concerned about using waste lime on pH soils above 8.0?**

		Safety concerns	
Location	Respondents	Yes	No
		-----% respondents-----	
Fargo	32	28	72
Grafton	48	25	75
Total	80	26	74

**Table 21. How effective was waste lime at controlling Aphanomyces?**

Location	Respondents	Waste lime effectiveness					
		Excellent	Good	Fair	Poor	Unsure	No Lime
-----% of respondents-----							
Fargo	36	8	19	-	-	22	50
Grafton	49	6	10	8	-	6	69
Wahpeton	42	26	19	5	-	17	33
Willmar	100	3	24	5	3	16	49
Total	227	9	19	5	1	15	50